

# Fossil dog represents a new species, paleontology grad student finds

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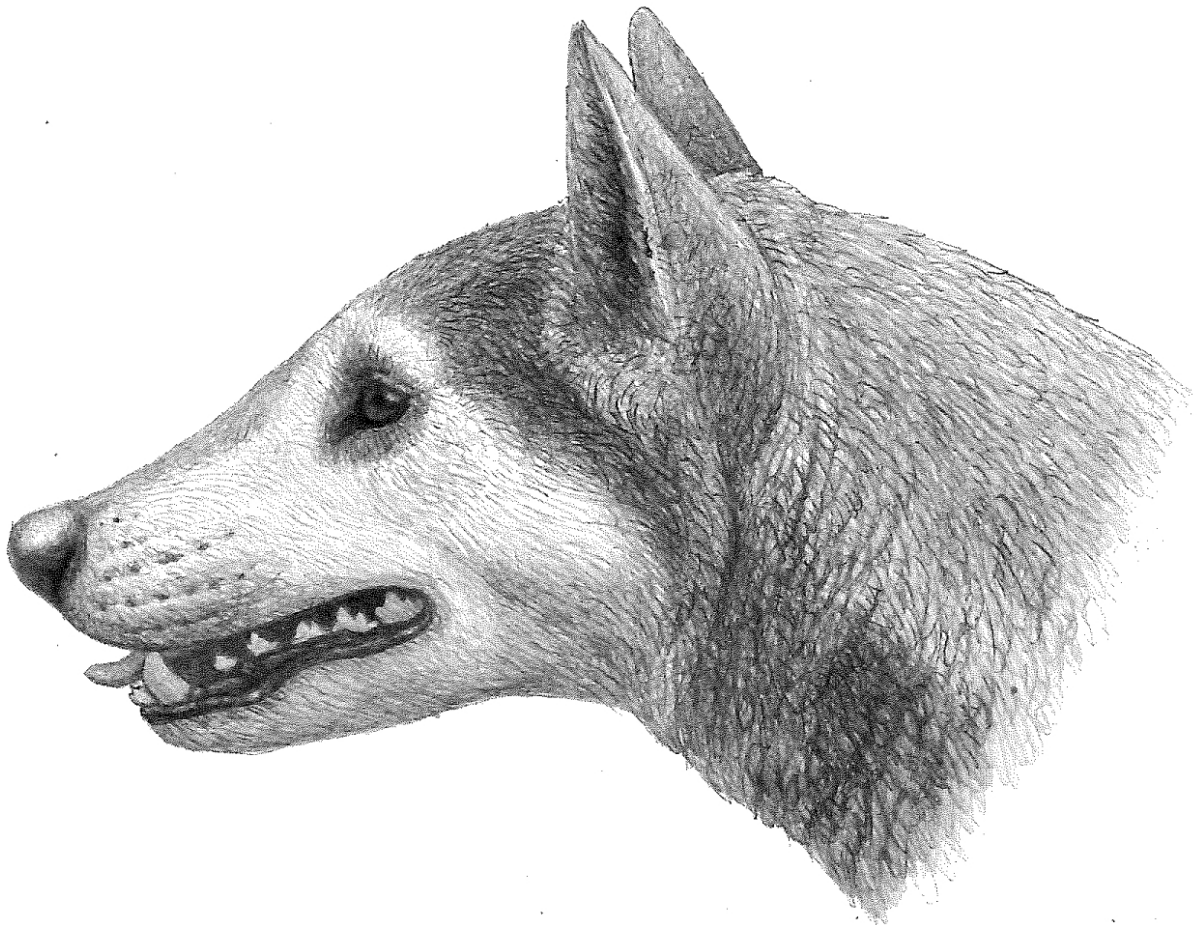


Illustration of *Cynarctus* by Mauricio Antón from “Dogs, Their Fossil Relatives and Evolutionary History.”

A doctoral student at the University of Pennsylvania has identified a new species of fossil dog. The specimen, found in Maryland, would have roamed the coast of eastern North America approximately 12 million years ago, at a time when massive sharks like megalodon swam in the oceans.

The newly named species is *Cynarctus wangi*, named for Xiaoming Wang, curator at the Natural History Museum of Los Angeles County and a renowned expert on mammalian carnivores. This coyote-sized dog was a member of the extinct subfamily Borophaginae, commonly known as bone-crushing dogs because of their powerful jaws and broad teeth.

"In this respect they are believed to have behaved in a similar way to hyenas today," said the study's lead author, Steven E. Jasinski, a student in the Department of Earth and Environmental Science in Penn's School of Arts & Sciences and acting curator of paleontology and geology at the State Museum of Pennsylvania in Harrisburg.

Fossils from terrestrial species from this region and time period are relatively rare, thus the find helps paleontologists fill in important missing pieces about what prehistoric life was like on North American's East Coast.

"Most fossils known from this time period represent marine animals, who become fossilized more easily than animals on land," Jasinski said. "It is quite rare we find fossils from land animals in this region during this time, but each one provides important information for what life was like then."

Jasinski, who is advised by Peter Dodson, a professor of paleontology in the Department of Earth and Environmental Science and professor of anatomy in the School of Veterinary Medicine, collaborated on the paper with Steven C. Wallace, a professor at East Tennessee State University



and curator at the East Tennessee State University National History Museum at the Gray Fossil Site.

Their work was published in the *Journal of Paleontology*.



Steven E. Jasinski

When Jasinski and Wallace first began their investigation of the specimen, which had been found by an amateur collector along the beach under the Choptank Formation in Maryland's Calvert Cliffs region and was then held by the Smithsonian Institution, they presumed it was a known species of borophagine dog, a species called *marylandica* that was questionably referred to as *Cynarctus*, a fossil of which had been found in older sediment in the same area. But when they compared features of the occlusal surfaces, where the top and bottom teeth meet, of the previously known and the new specimens, they found notable differences. They concluded that the specimen represented a distinct species new to science.

"It looks like it might be a distant relative descended from the previously known borophagine," Jasinski said.

Borophagine dogs were widespread and diverse in North America from around 30 million to about 10 million years ago. The last members went extinct around 2 millions of years ago during the late Pliocene. *C. wangi* represents one of the last surviving borophagines and was likely outcompeted by ancestors of some of the canines living today: wolves, coyotes and foxes.

Despite its strong jaws, the researchers believe *C. wangi* wouldn't have been wholly reliant on meat to sustain itself.

"Based on its teeth, probably only about a third of its diet would have been meat," Jasinski said. "It would have supplemented that by eating plants or insects, living more like a mini-bear than like a dog."

Although *C. wangi* represents the first known carnivore from the Choptank Formation, some of the animals that it would have lived beside are known. These include the ancient pigs *Desmathyus* and *Prosthenops*, the horned artiodactyl *Prosynthetoceras*, an ancient

elephant-like animal known as a gomphothere, and perhaps the ancient horse *Merychippus*.

"This new dog gives us useful insight into the ecosystem of eastern North America between 12 and 13 million years ago," Jasinski said.

**More information:** Steven E. Jasinski et al, A Borophagine canid (Carnivora: Canidae: Borophaginae) from the middle Miocene Chesapeake Group of eastern North America, *Journal of Paleontology* (2016). [DOI: 10.1017/jpa.2016.17](https://doi.org/10.1017/jpa.2016.17)

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